

MUNICIPAL POLLUTION SURVEY COMMUNITY OF KILLARNEY

TOWNSHIP OF RUTHERFORD
AND GEORGE ISLAND

1980

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MUNICIPAL POLLUTION SURVEY

COMMUNITY OF KILLARNEY

TOWNSHIP OF RUTHERFORD AND GEORGE ISLAND

1980

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SUMMARY

A survey of the Community of Killarney was conducted during October of 1979, in response to a request from the Township of Rutherford and George Island Municipal Council. All residences and those commercial establishments utilizing some form of sewage disposal were inspected. The survey was also used to gain information about the water supply systems utilized by the community.

Sample results indicated a high degree of bacteriological impairment in the ditches and some impairment of Killarney Channel due to the inadequacy of proper sewage disposal within the community. Without corrective action, continued degradation of the Killarney Channel, which is the main source of drinking water, will occur.

Twenty survey locations were identified as having different degrees of problems. These problems are believed to be the main contributors to water degradation in the ditches and the Killarney Channel. It would appear possible that all of the aforementioned problems can be rectified on an individual basis by various means of sewage disposal. The methods employed are dependent upon the lot sizes available for the installation of disposal systems. Financial assistance for these corrections can be obtained from the Ministry of the Environment through the Low-Cost Alternative, or Private Service Funding program.

The community, with the exception of Noble Street and three dwellings on Ontario Street, utilizes communal surface water supplies. These systems vary in size and age, and with the exception of the Killarney Central water supply, have no disinfection equipment. A Boil Water Order has been in effect since 1968 on the community, due to poor bacteriological quality of these supplies, including the Killarney Central water supply.

The communal water supply systems require the installation of proper disinfection equipment. There is also a need to upgrade the pumping equipment and much of the distribution system networks in order to overcome problems of breakdowns, pipe breaks, freeze-ups, low pressure and low quantity. Consideration of the development of a new communal water supply is recommended.

INTRODUCTION

In response to a request from the Council for the Township of Rutherford and George Island, the Ministry of the Environment conducted a survey in the hamlet of Killarney, a community of approximately 215 permanent residents.

The survey was requested to investigate the problems with the individual sewage disposal systems in the community. The investigations were also to determine the general suitability for correction of those problems through improvements to the individual systems. Any problems which might be corrected by individual system improvements could be considered for financial assistance under the Ministry of the Environment's Low-Cost Alternative, or Private Service Funding, grant program.

The survey was conducted during October of 1979. One hundred and ten (110) residential and commercial properties were inspected. This covered 100% of all buildings with sewage disposal facilities. The opportunity of the survey was also used to collect information about the various water supply systems in use in the community.

Location and Study Limits

The study area is located approximately 106 km southeast of the City of Sudbury in the District of Manitoulin. Access to the area is by Highway 637 or by boat from Georgian Bay (District Map, Appendix A). The study area was restricted to the Community of Killarney which is bounded by Noble Street to the north, the Killarney Channel to the south, Killarney Bay to the west, and Killarney Mountain Lodge to the East (Study Area Plan, Appendix B).

Physical Description and Topography

The study area is totally located on the southernmost tip of an unnamed peninsula in the geographic Township of Rutherford, specifically the Community of Killarney. The Community is situated on relatively flat land consisting of clay soil with bedrock outcrops. The terrain slopes gently towards Georgian Bay. The bedrock throughout the area consists of polished quartzite. The clay topsoil which is deposited between the outcrops is very impervious, thus resulting in poor subsurface drainage. Surface drainage is restricted to man-made ditches which flow towards the channel.

In general, the rock outcroppings and clay subsoil conditions prevent proper subsurface drainage throughout the area.

SURVEY PROCEDURES

A survey form was completed at each residence by interviewing the owner or tenant. In some cases, where the dwelling was vacant, information was gathered from neighbours and personal observations were made by the investigators. Appendix C is a sample of the questionnaire form utilized for the interviews. The lot was plotted on the survey forms to show the location of the dwelling, sewage disposal system and the general topography. During the plotting, observations for malfunctioning sewage systems or direct discharges were made.

Information was requested with regards to type of sewage disposal system, the age of the system, if approval was received from the Sudbury and District Health Unit when installed, and if any problems with the sewage system had been experienced.

Through these interviews, information about the type of water supply, the age, the origin of the supply, and any information regarding other dwellings that may also be serviced by the same system, was also determined. As well, information regarding the number of residents and the laundry facilities within each dwelling was obtained.

One hundred and ten residential and commercial establishments were found in the survey area. Personal interviews were conducted at 81 of the dwellings. No interview was done at 29 of the dwellings because the survey team was unable to contact the resident at home, or because the building was vacant.

In addition to the interviews and lot inspections, surface water samples were collected at or near identified problem areas in order to indicate the severity of impairment.

QUESTIONNAIRE RESULTS

Sewage Disposal

Appendix D summarizes the types and ages of the sewage disposal systems observed to be malfunctioning by the survey team and as reported by the owners or tenants.

Of the 110 systems inspected, 90 (82% of the total) are septic tank and tile fields. Of the remaining systems, 1 is a holding tank, 9 are pit privies, 1 is an incinerating toilet, and 7 residents surveyed had no idea what method of sewage disposal was being utilized. The survey also found two residences that had no apparent means of sewage disposal.

Sewage system ages ranged from 1 year to greater than 40 years. The majority of systems appear to be in the range of 5 to 20 years with the ages of 41 systems (45%) being unknown. In the majority of these latter cases, the age was not known due to the extreme length of time since installation.

Lot inspections and interviews revealed 20 (18%) sewage systems with problems. One system was found to allow the direct discharge of sewage, and six systems allow the discharge of wash water. The other systems were suspected to be experiencing break out problems due to the lack of soil depth over the tile field or due to system overloading. (Appendix D).

Water Supplies

The majority of the Community of Killarney is serviced by one of a number of communal surface water supplies. The only locations where this is not the case is the area west of Ontario Street on Noble Street where the dwellings are serviced by individual wells. No other areas apparently have been successful in developing adequate well supplies. Of the thirteen private communal water supplies, two are of sufficient size (serving more than 5 homes) that they fall under the provisions of the Ontario Water Resources Act.

The existing communal supplies utilize surface water such as the Killarney Channel and Killarney Bay. The two largest of these supplies are, the Killarney Central Supply which is a cooperative, and the Peter Lowe system which is privately owned. The rest of the small systems are individually owned and maintained.

None of the water supplies servicing the Community are capable of receiving M.O.E. approval in their present state. Only the Killarney Central Supply utilizes some degree of disinfection. The method used is iodination and it has not shown a satisfactory history of operation, although no health problems were reported by users of any of the systems.

In order to comply with M.O.E. criteria, the existing water supply and distribution systems will have to be upgraded. In particular, disinfection of the water is required. The

eventual replacement and possible combination of the distribution systems may also be needed to provide system users with an adequate quantity of water. Users did report problems of pump breakdowns, freeze-ups, pipe breaks, and low pressure/quantity.

SAMPLING RESULTS & DISCUSSION

Sewage Disposal

Bacteriological analysis was performed on ditch water samples collected at or near suspected problem areas. Results of these analyses revealed that there was sewage-contaminated water in the ditches in problem areas and at downstream locations prior to reaching the Killarney Channel.

All of the ditch samples indicated varying degrees of impairment. Lesser impairment was found from samples taken at minor sources such as wash water discharges, and a higher degree of impairment was found at major sources such as direct sewage discharges. Appendix "E" shows the sample results along with the survey locations suspected to be the cause. Residents have complained of offensive sewage odours emanating from ditches and from malfunctioning sewage systems.

Sample results of water in Killarney Channel itself revealed levels of total coliform counts of 400 to 600 per 100 ml. Faecal coliform counts of 40 per 100 ml were also found. These levels may be the result of sewage contamination entering the channel from the ditches and the ground water table. While these results are within the M.O.E. acceptable range for recreational swimming waters, they do not meet the criteria for human consumption without adequate disinfection.

The results of the sampling of Killarney Channel implicated an additional three sources bordering on the Channel. However, the total and faecal counts of the Channel sampling were smaller than for the ditches, probably due to the dilution factor. Three problem locations along the channel were indicated by the results of sampling: in front of Pitfield's Store, the Liquor Control Board outlet and the Sportman's Inn. The sewage systems from these properties would appear to be the cause of the high counts at those locations.

Water Supply

Sampling and analysis of both the Killarney Central Water supply and the Peter Lowe Water system is carried out on a regular basis by the Sudbury and District Health Unit and the Ministry of the Environment.

As a result of a history of poor bacteriological results, the Medical Officer of Health has imposed a Boil Water Order on both of these supply systems. These Orders have been in effect since 1968.

The Ministry of the Environment has endeavored to enforce its policy, which requires disinfection of all surface water supplies, with the two major supplies within the community. This action, however, has met with little success due to the financial limitations of the system owners.

A possible solution to this problem might be the combination of the existing systems under a single municipal operating authority. However, without a major upgrading, neither of two main systems can be permitted to expand. Therefore, due to the problems of reliability and performance with these communal systems, the final solution may require complete rebuilding of a single distribution system serving all areas and the development of a single supply pump house/ treatment facility to serve the whole community.

CONCLUSIONS

The survey of the community found evidence of sewage contamination problems and determined that there are 20 sewage systems (22%) which may be causing the problems. These problems vary in degrees of severity depending on whether they are caused by washwater discharges, hydraulically overloaded systems, or direct discharges.

Sewage from malfunctioning and inadequate sewage disposal systems appears to be affecting the water quality of Killarney Channel, which is the main source of drinking water within the Community. Sources of sewage discharge into ditches within the community were identified. This sewage could present a health hazard to small children, pets, and householders and is the probable source of odour complaints from the residents.

The correction of the malfunctioning and inadequate sewage disposal systems with proper individual systems would appear to be possible. For the most part, the properties within the community are of sufficient size that these corrections can be effected on the individual lots. In three of the cases, due to insufficient lot sizes, alternate means such as holding tanks, proprietary aerobic sewage treatment plants or remote tile bed areas may be required in order to remedy the problem. The problems with the sewage systems at the Liquor Control Board outlet, the Sportman's Inn and possibly Pitfield's Store, would appear to be in this category.

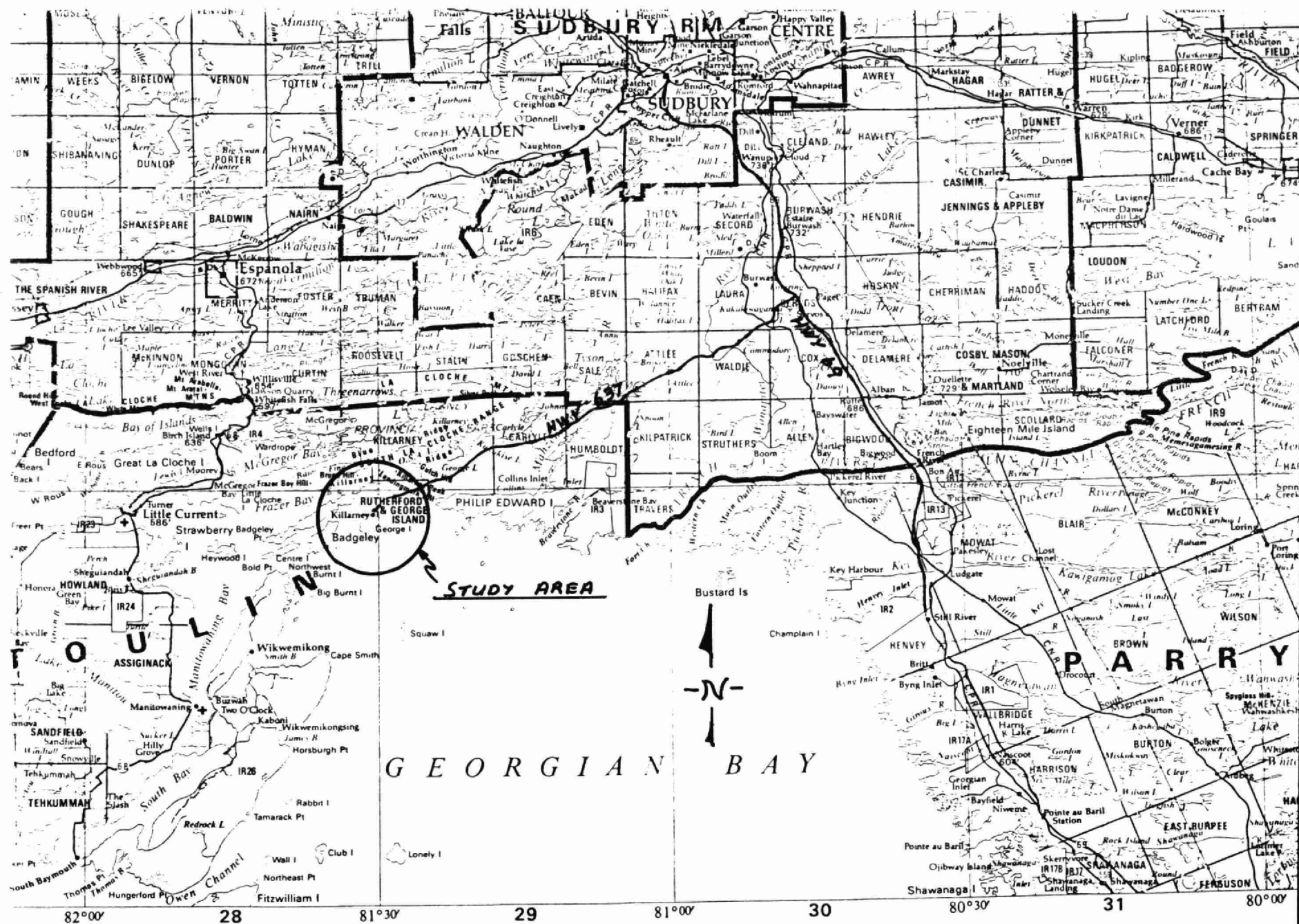
The only source of water for the majority of the community is the surface waters of Georgian Bay. Most residents get their water from one of the two major communal water systems which fall within Provincial legislation, the Killarney Central Co-op and Peter Lowe systems. Neither system meets the required standards of operation and both need to be upgraded. Equipment that can provide adequate disinfection of the water needs to be installed on both systems. It is Ministry policy that all communal surface water supply systems must provide adequate disinfection.

Residents have also experienced problems with the distribution of water by these communal systems. Breakdowns of pumping equipment, leaks, pipe breaks, freeze-ups, and low pressure/quantity problems indicate a need for a serious review of the capabilities and reliability of these systems. Full system replacement or major upgrading may be required in the near future in spite of the financial situations of the system owners.

RECOMMENDATIONS

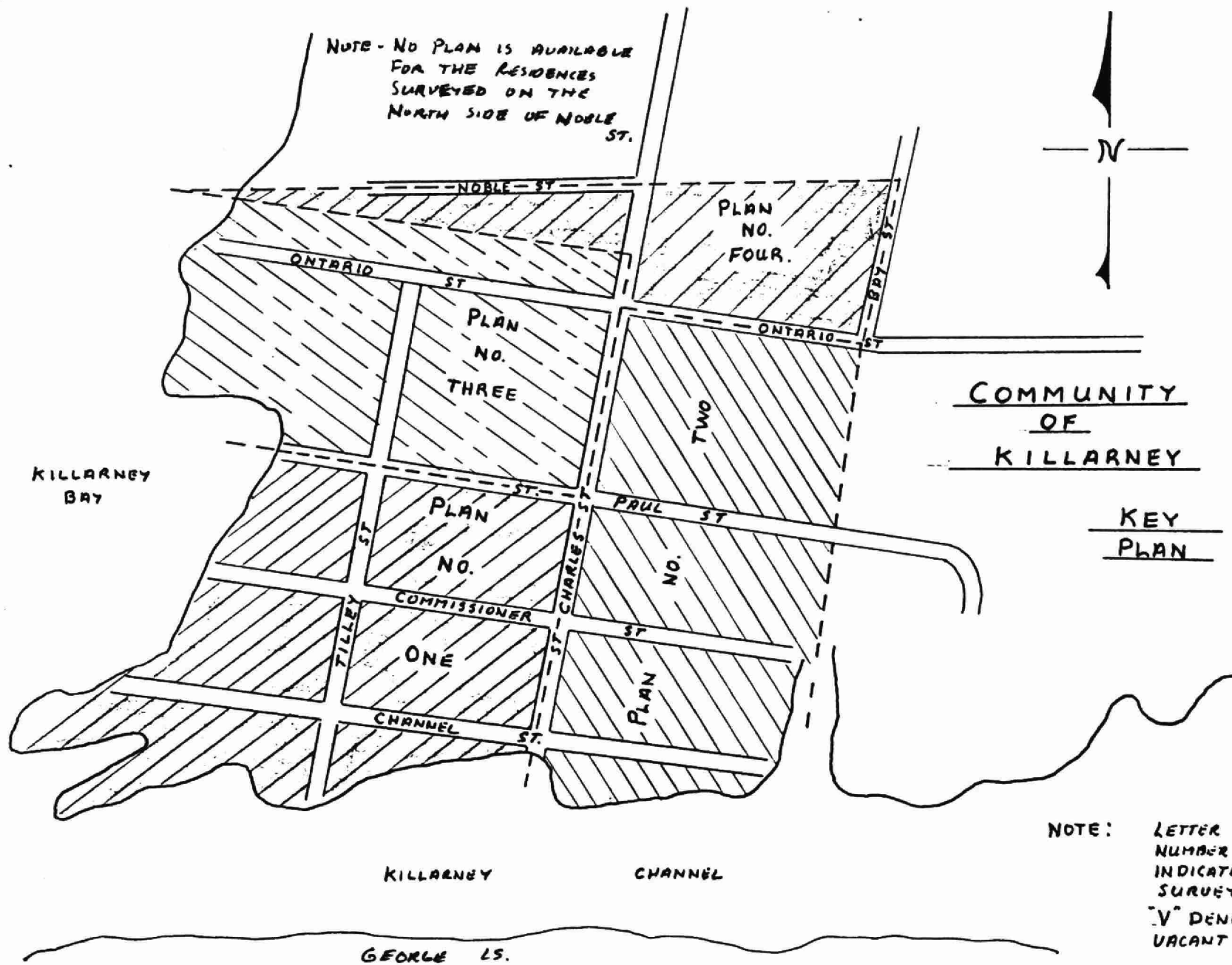
1. Problems of improper and malfunctioning sewage systems appear to be correctable through improvements to individual sewage disposal systems. It is recommended that the Municipality make application for financial assistance through the Ministry of the Environment's Low-Cost Alternative, or Private Service Funding, grant program to make corrections to individual sewage systems.
2. There is a serious need for a major upgrading of the two main communal water supply systems. These systems have operational problems the correction of which will result in a significant financial cost. It is recommended that consideration be given to replace the existing communal systems through the development of a new communal water supply system.

APPENDICES



STUDY LOCATION

APPENDIX "A"



BAY

ST. PAUL.

TILLEY STREET

COMMISSIONER STREET

ST. CHARLES

CHANNEL

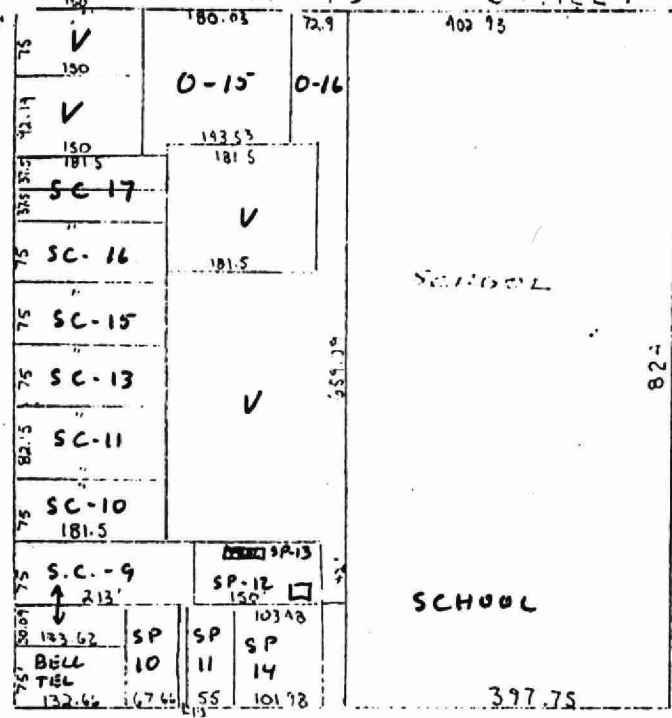
STREET

KILLARNEY CHANNEL

APPENDIX "B" Plan No. 1

ONTARIO STREET

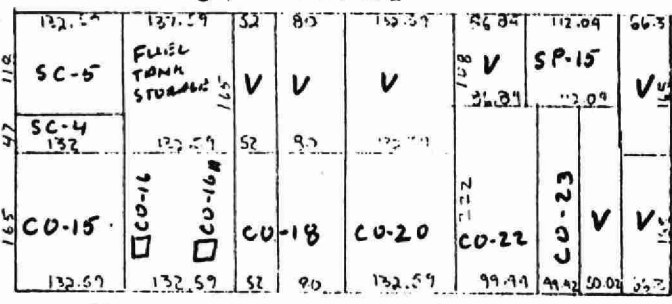
APPENDIX "B" PLAN NO. 2



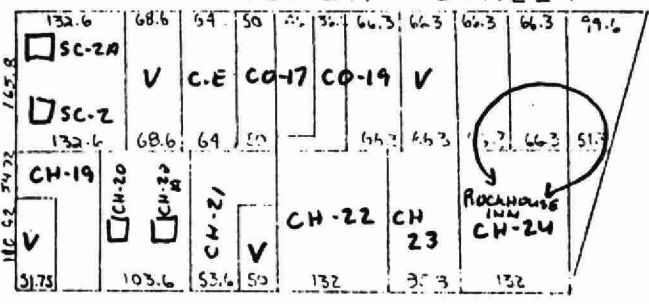
KILLARNEY MOUNTAIN LODGE



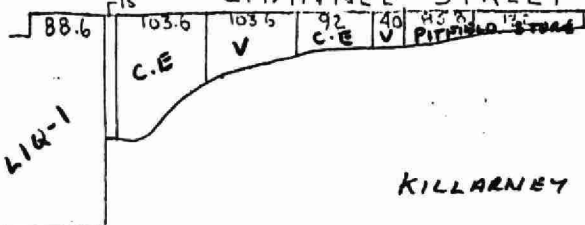
ST PAUL



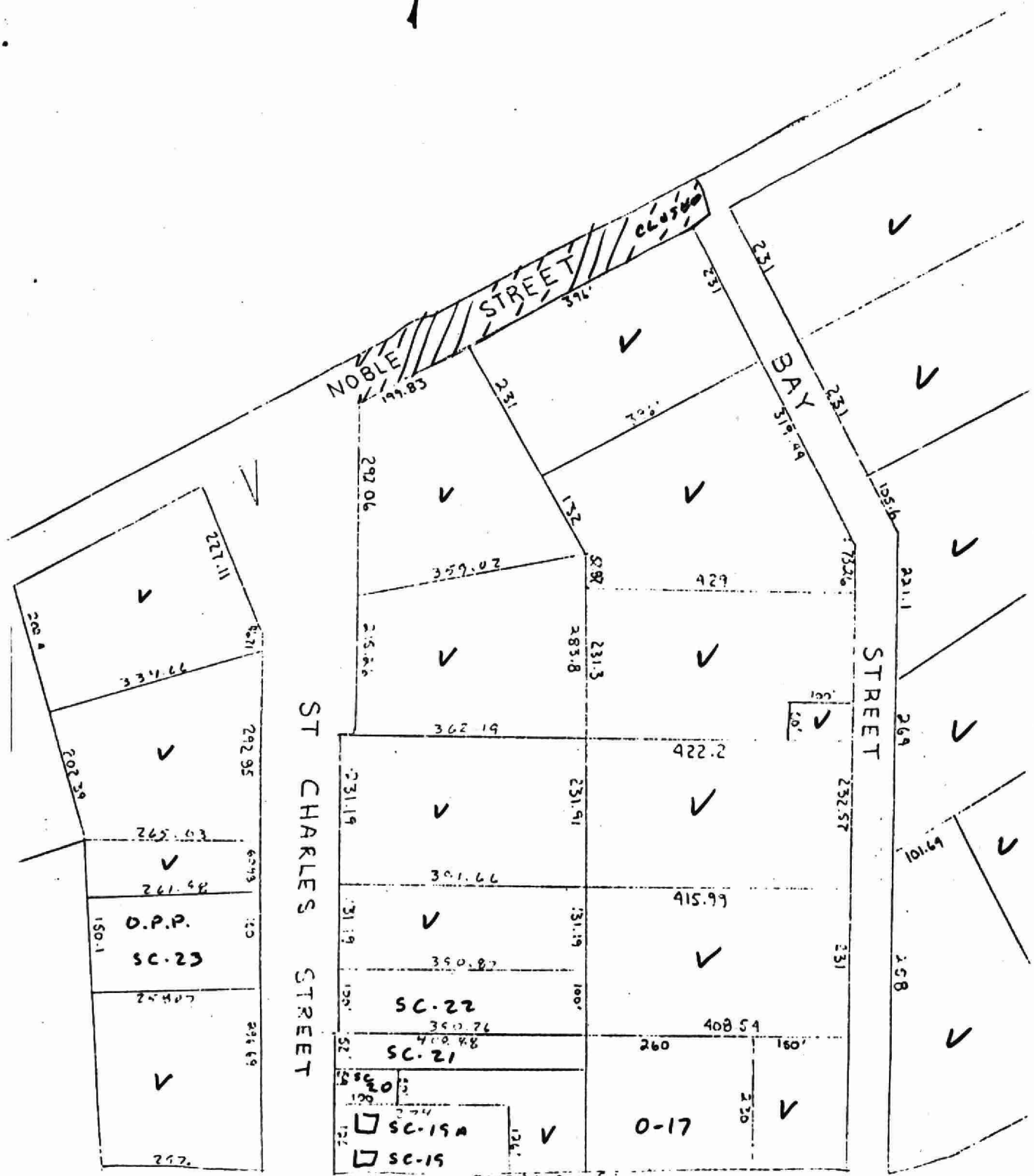
COMMISSONER STREET



CHANNEL STREET



KILLARNEY CHANNEL



SURVEY FORM

COMMUNITY: _____

INFORMATION RECEIVED FROM: _____

SURVEYED BY: _____

SAMPLE INFORMATION

Type Sample No. Sample Location Results	Bacteriological		Chemical	
	Total	Faecal	Total	Faecal

PROPERTY INFORMATION

Name of Owner _____ Owner's Phone No. _____
 Permanent Address _____

Name of Resident _____

Lot No.	Conc. No.	Township	Community	Street Address	Phone No.

Size of Lot	Drainage	Topography	Soil Type

No. of Residents	No. of Bedrooms	Laundry Facilities	Other

SEWAGE DISPOSAL SYSTEM

Type	Septic Tank _____ Tile Bed _____ (enter distances)	Leaching Pit	Pit Privy	Other (Specify)

Age	Distance to Surface Water	Distance to Water Supply

Comments: _____

Note Quantity

WATER SUPPLY

Type	Surface Water	Dug Well	Drilled Well	Cased Well	Point

Depth	Age	Type & Capacity of Pressure System	Type of Pipe	Chlorinator	Filtration

Comments:	Taste	Odour	Colour	Iron	Hardness	Quantity	Quality

DIAGRAM ON REVERSE SIDE SHOWING LOCATION AND DISTANCES FOR WATER SUPPLY AND SEWAGE DISPOSAL.

SURVEY RESULTS - SEWAGE DISPOSAL SYSTEMS WITH PROBLEMS

Survey No. & Location	Name of Owner or Tenant	Type of Sewage Dis- posal System & Age	Problem Encountered
S.P.-12 St. Paul St.	Mr. Robert Pitfield Sr.	septic tank and tile field - 15 yrs.	system too small, wash water discharge to ditch
S.P.-14 St. Paul St.	Mr. Lawrence Tyson	septic tank and tile field - 18 yrs.	system too small for demand - overloads
C.O.-4 Commissioner St.	Mr. John Payette	septic tank and tile field - 15 yrs.	system too small for demand - overloads
C.O.-10 Commissioner St.	Mr. E. Beauvais	septic tank and tile field - 8-10 yrs.	system too small for demand - overloads
C.O.-15 Commissioner St.	Mr. Peter Proulx	Pit Privy - no Leaching Pit	discharge to ditch from wash water
C.O.-19 Commissioner St.	Mr. Hans Knopczyk	2 holding tanks 3,500 gal.	too expensive - needs constant surveyance
C.H.-18 Channel St.	Sportsmans Inn Mr. Ray Miller	2 septic tanks and tile beds - one 10 yrs., one 25 yrs.	both systems too small for demand - seriously overloaded - discharge to ditch and channel
S.C.-4 St. Charles St.	Viola Beaucage	1 septic tank and file field - no age available	system appears to be overloaded and is discharging on ground
S.C.-6 St. Charles St.	Kenneth Burke	Pit Privy - no apparent leaching pit	wash water appears to be discharging to ditches
S.C.-13 St. Charles St.	Mr. T. Roque	septic tank and tile field - approx. 6 yrs.	system appears to be overloaded and is discharging at rear

Survey No. & Location	Name of Owner or Tenant	Type of Sewage Dis- posal System & Age	Problem Encountered
S.C.-23 St. Charles St.	Min. of Gov. Services O.P.P. Detachment	septic tank and tile field - 12 yrs.	system periodically plugs and issues odour occasionally
O-14 Ontario St.	Mr. James Noble	septic tank and tile field - 9 yrs.	not enough cover material - tiles exposed
O-11 Ontario St.	Mr. Joseph E. Low	Pit Privy - no leaching pit	possible discharge of wash water to ditch
O-15 Ontario St.	Mr. Gerald Murphy	septic tank and tile field - 8 yrs.	system appears to be discharging over neighbouring property
S.P.-6 St. Paul St.	Mr. Joseph G. Skelliter	no apparent sewage disposal system	sewage is discharging onto ground
LIQ-1 Channel St.	Prov. of Ontario Liquor Control Board	septic tank and tile field - 10 yrs.	sewage appears to be discharging to channel
S.C.-11 St. Charles St.	Mr. E. Burke	septic tank and tile field - no age known	system appears to be discharging
S.C.-16 St. Charles St.	Mr. A. Burke	septic tank and tile field - 10 yrs.	wash water discharge to ditch at front
N.-4 Noble St.	Mr. B. Herbert	septic tank and tile field - 3 yrs.	not enough cover material - tiles exposed
S.P.-15 St. Paul St.	Mr. Edmund Roque	septic tank and tile field - no age known	appears to have wash water discharge to ditch

BACTERIOLOGICAL SAMPLE RESULTS
OF DITCH AND CHANNEL SAMPLING

Sample No.	Location	Refer to	Total Coliform Counts per 100 ml	Faecal Coliform Counts Per 100 ml
K-1	Killarney Channel at Rockhouse Inn	C.H.-24	<200	40
K-2	Killarney Channel at Pitfields Store	Pitfields	600	40
K-3	Killarney Channel at liquor store	LIQ-1	<200	40
K-4	Tilley St. at Channel St.	C.H-18	4,400	80
K-5	Killarney Channel at Sportsman Inn	C.H-18	400	40
K-6	Ditch on Channel St. - West of Tilley	C.H-2	> 80,000	12,000
K-7	South ditch on Commissioner St. at Charles St.	S.C.-2A	> 80,000	6,000
K-8	North ditch on Commissioner St. at St. Charles St.	C.O.-15	> 80,000	12,000
K-9	St. Paul St. - South ditch - East of St. Charles	S.P.-15	> 80,000	12,000
K-10	St. Paul St. - North ditch - East of St. Charles	S.P.-14	> 80,000	12,000
K-11	St. Charles St. behind post office	S.C.-11	> 80,000	12,000
K-12	St. Charles St. - East ditch - South of Ontario	S.C.-16	> 80,000	9,400
K-13	Pomping on S.C.-17 From 0-15	0-15	>80,000	12,000

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